

Little Ohoopsee River Watershed Cluster TMDL Implementation Plan Narrative Johnson and Emanuel Counties, Georgia

Introduction

The Little Ohoopsee River has been listed as an impaired water body on the State of Georgia's 303(d) list of impaired waters due to the presence of fecal coliform bacteria. Because of the recent drought, this water body has become an intermittent stream. The lack of consistent water flow and the resultant high water temperatures of remaining pools of stagnant water has no doubt contributed to water quality problems of fecal coliform bacteria. Locals at the public meeting noted several factors that could possibly contribute to the problem of fecal coliform. Locals mentioned that there are several illegal dumping sites in the watershed area, and that there could possibly be some sewage runoff from septic tanks in the watershed. Also, locals believe that there is a problem with beaver dams in the watershed. Locals noted a buzzard roost and a poultry operation in the watershed. Despite identification of potential pollution sources, there is local question about the extent, if any, of the problem. While there is a general understanding and willingness to help improve water quality, these local concerns over the true nature of the water quality issues in the Little Ohoopsee River will have to be addressed to obtain acceptance and support of the TMDL Implementation Plan. The TMDL Implementation Plan concentrates on educating the public about non-point sources of water pollution and encouraging the use of best management practices at the agriculture, forestry, and urban and residential levels. Reduction of bacteria entering the Little Ohoopsee River by 98.7% will no doubt make for better water quality regardless. A more involved and in-depth monitoring program can also help better define the issues and resolve any local concerns.

Background and Purpose

The Little Ohoopsee River, lying in Johnson and Emanuel counties, is in the Upper Altamaha River Basin and eventually flows into the Ohoopsee River. The 18-mile segment with headwaters north of the City of Harrison in Washington County is currently listed on the 303(d) list in the State of Georgia for violating the water quality standard for fecal coliform bacteria.

The presence of fecal coliform bacteria in aquatic environments indicates that the water has been contaminated with the fecal material of man or other animals. At the time this occurred, the source water might have been contaminated by pathogens or disease producing bacteria or viruses, which can also exist in fecal material. Some waterborne pathogenic diseases include typhoid fever, viral and bacterial gastroenteritis and hepatitis A. The presence of fecal contamination is an indicator that a potential health risk exists for individuals exposed to this water. Fecal coliform bacteria may occur in ambient water as a result of the overflow of domestic sewage or non-point sources of human and animal waste.

The U.S. Clean Water Act requires a TMDL, or Total Maximum Daily Load, to be established for each pollutant in every body of water on the 303(d) list. A TMDL is a calculation of the maximum amount of pollutant, from both point and non-point sources, that a water body can receive and still adhere to the minimum water quality standard developed by the State of Georgia. The United States Department of Interior-Geological Survey (USGS) and the Georgia Environmental Protection Division (GAEPD) gathered samples from the Little Oohopee River beginning in January of 1999 through December of 1999. The GAEPD tested samples to detect the level of fecal coliform. For the months of May through October, fecal coliform should not exceed a geometric mean of 200 counts per 100ml on at least four samples collected from a given sampling site over a 30-day period at intervals not less than 24 hours. In the months of November through April, fecal coliform should not exceed a geometric mean of 1,000 colonies per 100ml, based on at least four samples collected from a given sampling site over a 30-day period at intervals not less than 24 hours, and not to exceed a maximum of 4,000 colonies per 100ml for any sample. The data gathered indicated two exceedances of the fecal coliform level during the months of May through October geometric mean standard of 200 colonies per 100ml in the Little Oohopee River. In 2000, the 18-mile segment of the Little Oohopee River was placed on the 303(d) list.

The purpose of the implementation plan is to identify the actions that must be taken in the future to decrease the level of fecal coliform in the Little Oohopee River by 98.7%, through reducing the amount of bacteria entering the stream. This should improve the water quality and better enable the water body to meet the state water quality standard.

Plan Preparation

The implementation plan was developed by the Heart of Georgia Altamaha RDC with the assistance of a watershed committee comprised of stakeholder representatives from the forestry industry, agriculture, the Georgia Forestry Commission, the Oohopee Soil and Water Conservation District, Cooperative Extension Service, the Canoochee RiverKeeper, the Pine Country R C & D, the NRCS, the Emanuel and Johnson County Commissions, a mayor, and the local presidents of Farm Bureau. The Heart of Georgia Altamaha RDC was in charge of drafting the plan under a contract signed with the GA EPD to prepare a TMDL Implementation Plan. A preliminary copy of the plan and planning process was discussed and a presentation was given at the initial watershed committee meeting on July 10, 2003 at the Emanuel County Courthouse. Along with the watershed committee, landowners with 500 acres or more of property within two miles of either side of the water body were invited to attend this initial committee meeting to give comments.

A meeting to educate the public and receive further stakeholder input by discussing and reviewing the draft plan took place with a presentation at the

Emanuel County Courthouse in Swainsboro, GA on August 7, 2003. At this meeting, any landowners who owned 25 acres or more of property within two miles of either side of the water body was sent a letter informing and inviting them to the public meeting. Fifteen persons attended this meeting. Public comments were solicited and input was placed into the plan. The plan addresses the steps that will be taken in the future to improve the water quality standard. The plan provides for monitoring and implementation actions to achieve goals submitted on the TMDL. A draft of the final plan was mailed to the watershed stakeholder committee on August 8, 2003, for solicitation of comments before final submittal to EPD.

TMDL Data and Potential Sources of Pollution

In January 1999, the USGS and the GAEPD began a follow-up sampling and monitoring study as a part of a five-year River Basin Planning cycle (Georgia EPD). The United States Department of Interior-Geological Survey (USGS) and the Georgia Environmental Protection Division (GAEPD) gathered samples from the Little Oohopee River beginning in January of 1999 through December of 1999. The GAEPD tested samples to detect the level of fecal coliform. For the months of May through October, fecal coliform should not exceed a geometric mean of 200 counts per 100ml on at least four samples collected from a given sampling site over a 30-day period at intervals not less than 24 hours. In the months of November through April, fecal coliform should not exceed a geometric mean of 1,000 colonies per 100ml, based on at least four samples collected from a given sampling site over a 30-day period at intervals not less than 24 hours, and not to exceed a maximum of 4,000 colonies per 100ml for any sample. The data gathered indicated two exceedances of the fecal coliform level during the months of May through October geometric mean standard of 200 colonies per 100ml in the Little Oohopee River. In 2000, the 18-mile segment of the Little Oohopee River was placed on the 303(d) list.

The Little Oohopee River watershed consists primarily of forest and cropland, with minimal areas of pasture and wetlands. Of the 159,901 acres that make up the impaired segment, 48 percent is comprised of forest. Another 27 percent is cropland. Urban non-point sources were identified by EPD as a possible primary source of the fecal coliform. One of the sources is the general storm water runoff that originates from the City of Kite. This is the runoff from construction, streets, and residential areas that results from rainfall.

As mentioned in the introduction, a number of illegal dumping sites exist within the watershed. Many locals noted that these dump sites include items such as dirty diapers, appliances, and other household materials. Locals also pointed out a site in the watershed near the US Highway 80 bridge where illegal dumping and general littering have occurred. Also, locals noted a number of deer carcasses that are frequently dumped in the water body.

Locals also mentioned the large number of beaver dams in the watershed. As mentioned in the introduction, the erection by beavers of large dams has been a continuous problem. In addition, the presence of the beavers also raises the possibility of an additional contributor of non-point source pollution. The beaver dams tend to aggravate the situation by further restricting the stream's ability to flow, thus allowing fecal coliform bacteria to grow on top of one another in the isolated pools of water that form as a result of the dams.

Also mentioned by one individual was the noticeable decline in the frog population within the watershed. This individual noted that the sitings of frogs living along a pond and creek on his property has substantially decreased over the last 20 years. The pond and creek both feed into the Little Ohoopee River. This decline in the frog population has been determined by environmental officials to be a worldwide unexplained phenomenon in scope.

Also, locals pointed out the minimal flow of streams in the watershed. They noted that many of the streams did not begin to flow from the drought again until 2001. Locals felt that the minimal testing that was conducted makes them unsure if there is really a problem at all. Locals expressed a definite concern to increase the amount of testing that is done. They also felt that the amount of rainfall needs to be taken into consideration when determining if there is really a problem.

Finally, locals expressed concern over a buzzard roost that is present along the banks of the Little Ohoopee River below the City of Kite. Many of the locals felt that the number of buzzards has a big effect of the presence of fecal coliform. Also, the locals noted a poultry operation that exists along the banks of the Little Ohoopee River. They felt like the poultry operation could be a possible contributor and might need to be looked at further.

Regulatory and Voluntary Measures: Existing and Future

Septic tank maintenance ordinances are an effective way to curtail urban and residential runoff. In Emanuel and Johnson counties, such ordinances are not in effect, though septic tank installations are regulated. It is important that future septic tank regulations, particularly relating to post-construction maintenance, be implemented at the local level. Future use of residential BMPs should also be explored as a practical means of limiting residential runoff. The local Cooperative Extension office can help individual homeowners assess and utilize BMPs through its Home*A*Syst Program.

Public education measures, beginning with the TMDL Implementation Plans and continuing in the future concerning Best Management Practices, are an efficient way to reach the local citizenry. Agriculture BMPs include, but are not limited to, the use of a waste storage structure, conservation tillage, waste storage pond, diversion, fencing, filter strips, stock trails/walkways, stream/shoreline protection, nutrient management, and well protection. Farmers utilize some of the agriculture BMPs currently; however, many do not practice them, and some do not know

how to define a BMP. The NRCS and the Pine Country RC&D continue to work with farmers by educating them and providing them with the proper resources/information to enable them to install current and future BMPs. Cooperative Extension can also provide individually tailored assistance with BMPs through its Farm*A*Syst Program.

The use of forestry BMPs are becoming more prevalent, however, some landowners continue to ignore forestry BMPs. The Georgia Forestry Commission has and continues to make a conscious effort to educate and monitor BMPs by aerial surveillance. Some forestry BMP categories include, but are not limited to, harvesting in SMZ's, mechanical site preparation, chemical site preparation, fertilization, firebreaks, skid trail stream crossings and road crossings, and logging roads. The State Implementation Committee of the forest industry's Sustainable Forestry Initiative can lend valuable support/assistance. It is unlikely that forestry contributes to any fecal coliform problems. To the contrary, more forested buffers of streams could help prevent such contamination.

Currently, the City of Kite does not have planning and zoning regulations in place within its city limits. Emanuel and Johnson counties currently do not have any planning and zoning regulations in the unincorporated areas as well. Emanuel and Johnson counties enforce erosion and sedimentation control measures at the state level. However, there are no erosion and sedimentation measures enforced at the local level.

The implementation of Land Use Management Regulations is planned in the future on a county-by-county basis. The regulations will be put into place as the necessary support at the local level is obtained. They will be enforced by local governments, GA DNR, GA Department of Human Resources, GA Department of Community Affairs, and the GA Forestry Commission. The regulations would utilize state-mandated environmental planning criteria, local planning and zoning ordinances, BMPs for agriculture and forestry, erosion and sedimentation measures, and septic tank permitting to manage runoff and development. The Heart of Georgia Altamaha RDC will provide technical assistance in developing a "zoning lite" ordinance to encourage local governments to implement planning and zoning measures.

Storm Water Management Regulations are planned for implementation in the future as well on a county-by-county basis. The new regulations will be put into effect as requisite local support is obtained, and the GA DNR, GA EPD, and local governments will enforce them. The regulations would utilize local ordinance enforcement to produce better erosion and sedimentation control at the time of construction. These regulations could possibly require post-construction erosion and sedimentation control and possibly utilize passive design elements in new developments and stream buffers to prevent runoff.

A Cooperative Monitoring Program is needed for future implementation. The GA DNR, GA EPD, local governments, and possibly local volunteers would conduct the program. Additional regular monitoring of the stream is needed to better define pollutant sources. The program could also consist of a scientific study of issues such as fecal coliform levels in slow-moving blackwater streams, and other potential issues such as the correlation of sampling results to rainfall and the standards themselves. It also could possibly seek funding and cooperation for watershed assessments, including possible model demonstration assessments for small watersheds, and develop a program for implementation assessments for the watershed. Locals also believe there should be better enforcement of existing regulations from the local and state levels.

An implementation of an Adopt-A-Stream program is needed. The program would be utilized through various organizations and groups throughout the watershed. The program will provide updates on current stream conditions in the future as the requisite funding and support are developed.

Schedule for Implementation

BMPs for the agriculture and forestry community will be promoted beginning in 2003 and continuing. The schedule for implementing the Land Use Management Regulations and the Storm Water Management Regulations is on a county-by-county basis in the near future, as local support is obtained. It would be helpful if the Cooperative Monitoring Program could be implemented in 2004, pending funding. An Adopt-A-Stream Program would also be helpful if implemented by 2004, pending local support and funding.

Monitoring Plan

The GA Forestry Commission will continue to do aerial and land surveillance of the watershed area. It is possible for Adopt-A-Stream monitoring to begin to take place in the future, as the requisite funding and support are developed.

Funding

The GA Forestry Commission will continue to do aerial and land surveillance of the watershed area. Also, the Georgia Forestry Commission will continue to administer Best Management Practices Assurance Examinations. The U.S. Fish and Wildlife Service is funding a program called "Partners for Wildlife," which is sponsored through the GA Soil and Conservation Service. Also, some funding will originate from the USDA through the Farm Service Agency and the Natural Resource Conservation Service. The UGA Cooperative Extension Service is funding two programs; Home*A*Syst and Farm*A*Syst, which are enacted by the local agriculture extension agent offices. Finally, the State Implementation Committee (SFI) is funding a program called "Sustainable Forestry Initiative." The National Fish and Wildlife Foundation is funding a program called the General Grant Challenge Program. The Georgia Department of Natural Resources Wildlife Resources Division has produced two booklets that are available to the public, "Small Game Management in Georgia" and "Beaver Management and

Control in Georgia.” Additional funding is likely needed to establish more in-depth monitoring.

Criteria to Determine Progress

The criteria to determine whether progress toward attainment is being made will be shown through the results of future monitoring by any improved fecal coliform levels through reducing the amount of bacterial loading in the water body.

Conclusion

Improved future utilization and implementation of best management practices at the agricultural, residential, and urban levels will provide substantial progress in reducing the levels of fecal coliform bacteria in the water body. The examination of potential non-point sources would be helpful. A more in-depth monitoring program would better define the true nature and extent of the problems. Better public education of problems, solutions, and existing enforcement and prevention mechanisms would be beneficial. Any action(s) taken as a result of such an examination would further assist in producing progress. We anticipate the removal of the Little Ohoopsee River from the State of Georgia’s 303(d) list.

STATE OF GEORGIA TMDL IMPLEMENTATION PLAN WATERSHED APPROACH Altamaha River Basin

Local Watershed Governments

Heart of Georgia – Altamaha RDC
Emanuel County
Johnson County
City of Kite
City of Riddleville

TMDL Implementation Plans are platforms for establishing a course of actions to restore the quality of impaired water bodies in a watershed. They are intended as a continuing process that may be revised as new conditions and information warrant. Procedures will be developed to track and evaluate the implementation of the management practices and activities identified in the plans. Once restored, appropriate management practices and activities will be continued to maintain the water bodies.

This Implementation Plan addresses an action plan, education/outreach activities, stakeholders, pollutant sources, and potential funding sources affecting the sub-basin. In addition, the Plan describes (a) regulatory and voluntary practices/control actions (*management measures*) to reduce target pollutants, (b) milestone schedules to show the development of the management measures (*measurable milestones*), (c) a monitoring plan to determine the efficiency of the management measures and measurable milestones, and (d) criteria to determine whether substantial progress is being made towards reducing pollutants in impaired waterbodies. The overall goal of the Plan is to define a set of actions that will help achieve water quality standards in the state of Georgia. Following this section is information regarding individual segments.

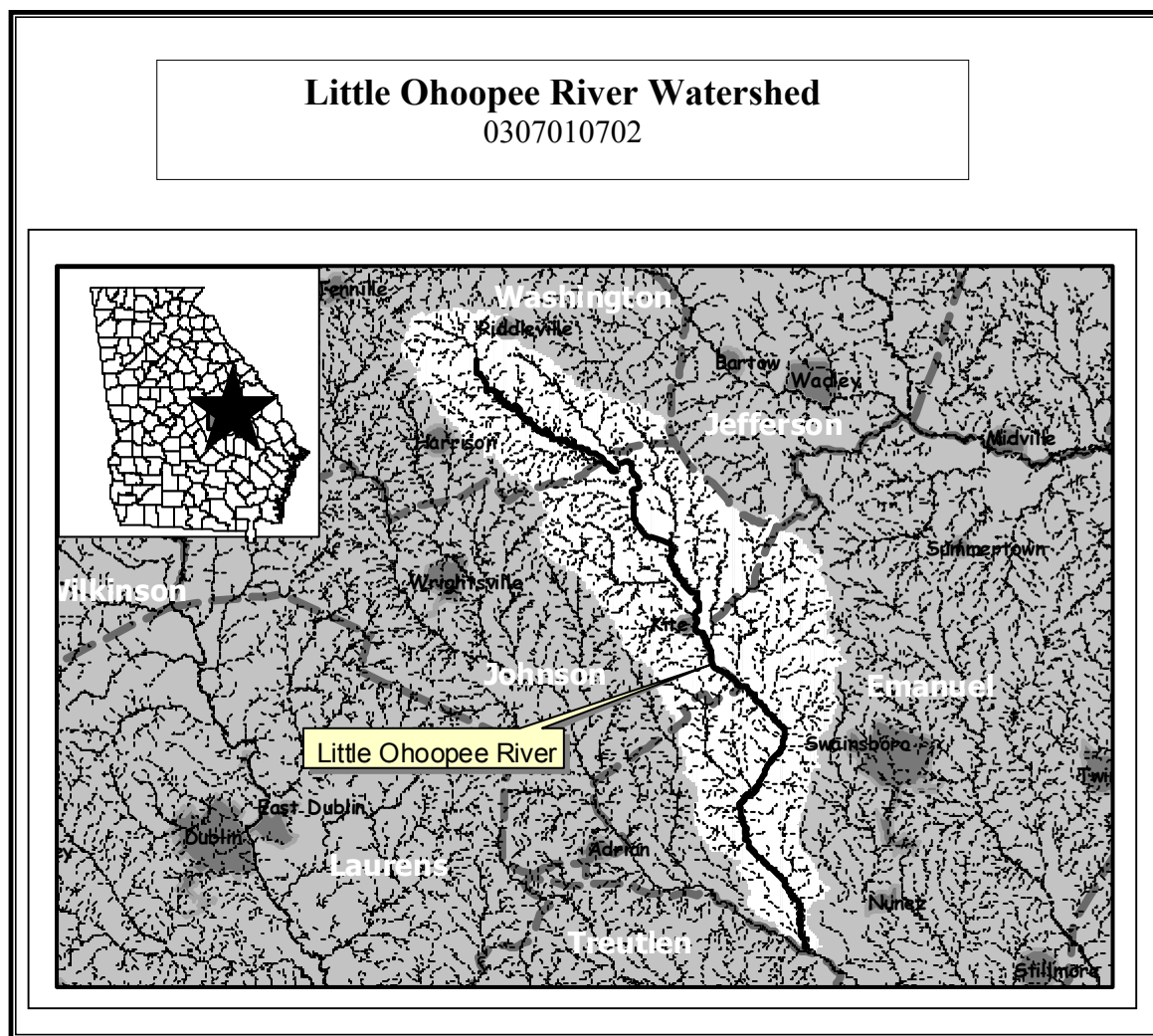


FIGURE 1

| Impaired Waterbody* | Impaired Stream Location | Impairment |
|-------------------------|-------------------------------|----------------|
| 1. Little Oohopee River | Sardis Creek to Oohopee River | Fecal Coliform |
| 2. | | |
| 3. | | |

*These Waterbody Numbers are referenced throughout the Implementation Plan.

| POLLUTANT: | SOURCE: | EFFECT: | WHAT CAN I DO? | |
|------------------------------------------------------------|-------------------------------------------------|---------------------------------------------------------|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------|
| | | | At Home: Community, School | At Work: Business, Government |
| <input type="checkbox"/> Dissolved Oxygen (DO) | <input type="checkbox"/> Industrial | <input type="checkbox"/> Habitat | Get Involved in Adopt-A-Stream Public Education Use Proper BMPs Check Septic System | Develop Zoning Ordinances Dispose of Harmful Chemicals Properly |
| <input checked="" type="checkbox"/> Fecal Coliform (FC) | <input checked="" type="checkbox"/> Urban | <input type="checkbox"/> Recreation | | |
| <input type="checkbox"/> Sediment | <input checked="" type="checkbox"/> Agriculture | <input type="checkbox"/> Drinking Water | | |
| <input type="checkbox"/> Metals | <input type="checkbox"/> Forestry | <input type="checkbox"/> Aesthetics | | |
| <input type="checkbox"/> Fish Consumption Guidelines (FCG) | <input checked="" type="checkbox"/> Residential | <input checked="" type="checkbox"/> Other (Please List) | | |
| <input type="checkbox"/> Other (Please List) | <input type="checkbox"/> Other (Please List) | Fishing | | |

INFORMATION/EDUCATION/OUTREACH ACTIVITIES

An education/outreach component will be used to enhance public understanding of and participation in implementing the TMDL Implementation Plan.
List of all previous and planned information/education/outreach activities.

| Responsible Organization Or Entity | Description | Impacted Waterbodies* | Target Audience | Anticipated Dates (MM/YY) |
|------------------------------------|-----------------------------------------------------------------------------------------|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| Heart of Georgia Altamaha RDC | TMDL Presentation at the Emanuel County Courthouse for the committee | Little Ohoopsee River | Local Governments, Agriculture Organizations, Georgia Forestry Commission, Forestry Industries, Ohoopsee Soil and Water Conservation District, Natural Resource Conservation Service, Pine Country RC & D, Canoochee RiverKeeper | July 10, 2003 |
| Heart of Georgia Altamaha RDC | A Press Release to The Forest Blade concerning Public Meeting (July 11, 2003) | Little Ohoopsee River | General Public | July 11, 2003 |
| Heart of Georgia Altamaha RDC | A Public Service Announcement to The Radio Group in Swainsboro, GA | Little Ohoopsee River | General Public | July 14, 2003 |
| Heart of Georgia Altamaha RDC | TMDL Presentation at City of Stillmore City Council Meeting | Little Ohoopsee River | City Officials | July 14, 2003 |
| Heart of Georgia Altamaha RDC | TMDL Presentation for Public Meeting at the Emanuel County Courthouse in Swainsboro, GA | Little Ohoopsee River | Landowners with 25 Acres or more within 2 miles on either side of the Little Ohoopsee River | August 7, 2003 |
| Heart of Georgia Altamaha RDC | TMDL Presentation at City of Wrightsville City Council Meeting | Little Ohoopsee River | City Officials | August 11, 2003 |
| Heart of Georgia Altamaha RDC | TMDL Presentation at Johnson County Commissioners Meeting | Little Ohoopsee River | County Officials | August 11, 2003 |
| Heart of Georgia Altamaha RDC | TMDL Presentation at City of Swainsboro City Council Meeting | Little Ohoopsee River | City Officials | August 18, 2003 |
| Heart of Georgia Altamaha RDC | TMDL Presentation at Emanuel County Commissioners Meeting | Little Ohoopsee River | County Officials | September 2003 |
| Heart of Georgia Altamaha RDC | TMDL Presentation at City of Nunez City Council Meeting | Little Ohoopsee River | City Officials | September, 2003 |
| Heart of Georgia Altamaha RDC | TMDL Presentation at City of Kite City Council Meeting | Little Ohoopsee River | City Officials | September, 2003 |
| Heart of Georgia Altamaha RDC | TMDL Presentation at City of Adrian City Council Meeting | Little Ohoopsee River | City Officials | October, 2003 |
| Heart of Georgia Altamaha RDC | TMDL Presentation at City of Oak Park City Council Meeting | Little Ohoopsee River | City Officials | November, 2003 |

STAKEHOLDERS

EPD encourages public involvement and the active participation of stakeholders in the process of improving water quality. Stakeholders can provide valuable information and data regarding their community and the impaired water bodies and can provide insight and/or implement management measures.

List of local governments, agricultural organizations or significant landholders, commercial forestry organizations, businesses and industries, and local organizations including environmental groups and individuals with a major interest in this watershed.

| Name/Organization | Address | City | State | Zip | Phone | E-Mail |
|----------------------------------------------|---------------------------------|--------------|-------|-------|----------------|--------|
| Emanuel County Cooperative Ext. Service | 129 North Anderson Drive | Swainsboro | GA | 30401 | (478)-237-1226 | |
| Emanuel County Commissioners | PO Box 787 | Swainsboro | GA | 30401 | (478)-237-3881 | |
| Natural Resource Conservation Service | 145 N. Anderson Drive | Swainsboro | GA | 30401 | (478)-237-8866 | |
| Rayonier Southeast Forest Products | PO Box 626 | Jesup | GA | 31598 | (912)-530-8471 | |
| Pine Country RC & D | 105 Martin Luther King JR Drive | Soperton | GA | 30457 | (912)-529-6652 | |
| International Paper | RT 2 Box 2 | Soperton | GA | 30457 | (912)-529-3447 | |
| Canoochee RiverKeeper | PO Box 263 | Swainsboro | GA | 30401 | (478)-289-6523 | |
| Ohoopee Soil and Water Conservation District | 618 Bird Flanders Road | Swainsboro | GA | 30401 | N/A | |
| Johnson County Commissioners | PO Box 269 | Wrightsville | GA | 31096 | (478)-864-3388 | |
| Emanuel County Farm Bureau | PO Box 450 | Swainsboro | GA | 30401 | N/A | |
| City of Kite | Po Box 190 | Kite | GA | 31049 | (478)-469-3866 | |
| Georgia Forestry Commission | 18899 US 301 North | Statesboro | GA | 30458 | (912)-681-0490 | |

WATER BODIES/STREAMS COVERED IN THIS PLAN:

These impaired streams are located in the same sub-basin identified by a HUC10 code. Most of the information contained in this section comes from the 303(d) list and has been completed by employees of the EPD Water Protection Branch. Data that placed stream on 303(d) list will be provided upon request.

| Waterbody Name #1 | Location | Miles/Area Impacted | Use Classification | Partially Supporting/ Not Supporting (PS/NS) |
|------------------------------|-------------------------------------------------------------------------------------|---------------------|--------------------------|----------------------------------------------|
| Little Ohoopsee River | Sardis Creek to Ohoopsee River | 18 | Fishing | PS |
| Primary County | Secondary County | Second RDC | Source (Point/ Nonpoint) | |
| Emanuel | Johnson | | Nonpoint | |
| Pollutants | Water Quality Standards | Required Reduction | TMDL ID | Date TMDL Established |
| Fecal Coliform | 1000/100 ml (geometric mean Nov. – April) 200/100 ml (geometric mean May – Oct.) | 98.7 % | | January 2002 |

POLLUTANT SOURCES

It is important to recognize the potential source(s) causing water quality impairment. Each source must be controlled to comply with target TMDL/Load Allocations for each pollutant. Included is a description of how the sources contribute to the impairment and the waterbody that is impaired.

List of major nonpoint source categories and sub-categories or individual sources (Urban Runoff, Agriculture, Forestry, Municipal Sewage Treatment Plant)

| Pollutant | Sources of Pollutants | Description of Contribution To Impairment | Impacted Waterbodies* |
|----------------|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| Fecal Coliform | Agriculture | Possible introduction of animal waste from upslope practices and sediment from storm water runoff when BMPs are not followed | Little Ohoopsee River |
| Fecal Coliform | Residential | Possible introduction of discharges resulting from septic tank runoff and littering from nearby residential areas, including the City of Kite | Little Ohoopsee River |
| Fecal Coliform | Municipal (Storm water Runoff) | Possible introduction of storm water runoff from municipal areas (City of Kite) | Little Ohoopsee River |
| Fecal Coliform | Urban | Possible introduction of water runoff from urban development in and near City of Kite | Little Ohoopsee River |

MANAGEMENT MEASURES, MEASURABLE MILESTONES AND SCHEDULE

(i.e. Local codes and ordinances, Erosion and Sedimentation Control, Storm Water Management, Local water resource monitoring)

The following table lists management measures that have been or will be implemented to achieve water quality standards and the load reductions established in the TMDL. The management measures, including regulatory or voluntary actions or other controls by governments or individuals, specifically apply to the pollutant and the waterbody for which the TMDL was written. A description is provided of how these management measures are/will be accomplished through reliable and effective delivery mechanisms, and how these management measures are/will help achieve the target TMDL. Included is the source of the pollutant, anticipated/past effectiveness of the management measure (very effective, somewhat effective, not effective), the current status (i.e. enforced, in-progress, planning), and measurable milestones and schedule. Milestones are used to measure progress in attaining water quality standards and to determine whether management measures are being implemented.

| Management Measure | Responsible Government, Organization or Entity | Description | Enacted/Projected Date | Status | Regulatory/Voluntary |
|--------------------------------------------------|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|---------|----------------------|
| Georgia Water Quality Control Act (OCGA 12-5-20) | Georgia DNR, EPD | Makes it unlawful to discharge excessive pollutants into waters of the state in amounts harmful to public health, safety or welfare, animals, or the physical destruction of stream habitat | 1964 | Current | Regulatory |

| Pollutant(s) Affected | Sources of Pollutant(s) | Impacted Waterbodies* | Anticipated or Past Effectiveness |
|-----------------------|-------------------------------------|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Fecal Coliform | Agriculture, Residential, Municipal | Little Ohoopsee River | Effective in point source pollution in dealing with local governments and industry/ Limited effectiveness in dealing with non-point sources |

| Measurable Milestones | Schedule | | Comments |
|------------------------------------------------------|----------|---------|------------------------------------------------------------------------------------------------------------------------|
| | Start | End | |
| Land Use Application System Permits NPDES Permits | 1964 | Ongoing | Work with local governments and others to increase monitoring of Land Use Application System Permits and NPDES Permits |

| Regulation/Ordinance or Management Measure | Responsible Government, Organization or Entity | Description | Enacted/Projected Date | Status | Regulatory /Voluntary |
|--------------------------------------------|--------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|------------------------|---------|-----------------------|
| Agricultural BMPs | Georgia Soil and Water Conservation Service, Georgia Department of Agriculture | Leads effort in agricultural water quality program, develops agricultural BMP educational and monitoring efforts | 1987 | Current | Voluntary |

| Pollutant(s) Affected | Sources of Pollutant(s) | Impacted Waterbodies* | Anticipated or Past Effectiveness |
|-----------------------|---------------------------------------------------------------------------|-----------------------|------------------------------------------------------------------------------------------------------------------------|
| Fecal Coliform | Pesticide management, animal facility runoff, irrigation water management | Little Ohoopsee River | Utilization of BMPs has been found to be effective in controlling runoff and other contaminants from farming practices |

| Measurable Milestones | Schedule | | Comments |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | Start | End | |
| Waste Storage Structure, Conservation Tillage, Waste Storage Pond, Diversion, Fencing, Field Borders, Filter Strips, Stock Trails/Walkways, Stream/Shoreline Protection, Nutrient Management, Well Protection, Land Use Application System Permits and NPDES Permits | 1987 | Ongoing | Additional BMPs possible depending on results of future monitoring/ Work with local governments and others to increase monitoring of Land Use Application System Permits and NPDES Permits |

| Regulation/Ordinance or Management Measure | Responsible Government, Organization or Entity | Description | Enacted/Projected Date | Status | Regulatory/Voluntary |
|--------------------------------------------|------------------------------------------------|-------------------------------------------------------------------------------------------|------------------------|---------|----------------------|
| Nutrient Application Plan | Natural Resource Conservation Service | Leads effort in agricultural water quality by developing plans to control nutrient runoff | 2000 | Current | Voluntary |

| Pollutant(s) Affected | Sources of Pollutant(s) | Impacted Waterbodies* | Anticipated or Past Effectiveness |
|-----------------------|---------------------------------------------------|-----------------------|-------------------------------------------------------------------------------------------|
| Fecal Coliform | Pesticide management, irrigation water management | Little Ohoopsee River | Effective in the initial stages of the program's beginning if plans are followed properly |

| Measurable Milestones | Schedule | | Comments |
|-------------------------------------------------------------------------------------------------------------|----------|---------|-----------------------------------------------------------------------------------------------------------------------------------|
| | Start | End | |
| Increase the number of farming establishments utilizing nutrient application plans to limit nutrient runoff | 2000 | Ongoing | Plans will continue to be effective at the local level if they continue to be implemented by more and more farming establishments |

| Regulation/Ordinance or Management Measure | Responsible Government, Organization or Entity | Description | Enacted/Projected Date | Status | Regulatory/Voluntary |
|-----------------------------------------------|----------------------------------------------------------------|-----------------------------------------------------------------------------------------------|------------------------|---------|----------------------|
| Comprehensive Nutrient Management Plan (CNMP) | Agriculture Extension Service, Department of Natural Resources | Leads effort in agricultural water quality by developing plans to control animal waste runoff | 2001 | Current | Regulatory |

| Pollutant(s) Affected | Sources of Pollutant(s) | Impacted Waterbodies* | Anticipated or Past Effectiveness |
|-----------------------|-------------------------|-----------------------|--------------------------------------------------------------------------------------------------|
| Fecal Coliform | Animal facility runoff | Little Ohoopsee River | Effective in the initial stages of the program's beginning if the plans are carried out properly |

| Measurable Milestones | Schedule | | Comments |
|------------------------------------------------------------------------------------------------------------------------|----------|---------|-----------------------------------------------------------------------------------------------------------------------------------|
| | Start | End | |
| Increase the number of farming establishments implementing plans/Encourage increased compliance with plan requirements | 2001 | Ongoing | Plans will continue to be effective at the local level if they continue to be implemented by more and more farming establishments |

| Regulation/Ordinance or Management Measure | Responsible Government, Organization or Entity | Description | Enacted/Projected Date | Status | Regulatory/Voluntary |
|-------------------------------------------------------------|-------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|---------|----------------------|
| Georgia Erosion and Sedimentation Control Act (OCGA 12-7-1) | Georgia Department of Natural Resources Environmental Protection Division and Local Governments | Authorizes local governments to adopt a comprehensive ordinance governing land-disturbing activities within local planning and zoning jurisdictions and require the use of BMPs | Amended 2000 | Current | Regulatory |

| Pollutant(s) Affected | Sources of Pollutant(s) | Impacted Waterbodies* | Anticipated or Past Effectiveness |
|-----------------------|--------------------------------------|-----------------------|-----------------------------------------------------------------------------------------------------------|
| Fecal Coliform | Agricultural, Residential, Municipal | Little Ohoopsee River | Effectiveness is minimal due to a lack of local enforcement of erosion and sedimentation control measures |

| Measurable Milestones | Schedule | | Comments |
|--------------------------------------------------|----------|---------|------------------------------------------------------------------------------------------------------------------------------|
| | Start | End | |
| Local erosion and sedimentation control measures | 2003 | Ongoing | Work with local governments to obtain a greater enforcement of erosion and sedimentation control measures at the local level |

| Regulation/Ordinance or Management Measure | Responsible Government, Organization or Entity | Description | Enacted/Projected Date | Status | Regulatory /Voluntary |
|--------------------------------------------|-------------------------------------------------------------|----------------------------------------------------------------------------------------------|------------------------|---------|-----------------------|
| Local Septic Tank Permit Ordinance | Georgia Department of Human Resources and Local Governments | Authorizes the regulation of septic tanks, including placement, installation and maintenance | 1969 | Current | Regulatory |

| Pollutant(s) Affected | Sources of Pollutant(s) | Impacted Waterbodies* | Anticipated or Past Effectiveness |
|-----------------------|-------------------------|-----------------------|-------------------------------------------------------------------------------------------------|
| Fecal Coliform | Residential | Little Ohoopsee River | Effective at point of construction and poor at point of post-construction follow up maintenance |

| Measurable Milestones | Schedule | | Comments |
|-----------------------------------------------------------------------------|----------|---------|------------------------------------------|
| | Start | End | |
| Continuous updating of health inspector manual to upgrade current standards | 1969 | Ongoing | Better enforcement at local level needed |

| Regulation/Ordinance or Management Measure | Responsible Government, Organization or Entity | Description | Enacted/Projected Date | Status | Regulatory /Voluntary |
|--------------------------------------------|---------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|---------|-----------------------|
| Georgia Planning Act (OCGA 12-2-8) | Georgia Department of Natural Resources and Local Governments | Authorized DCA to develop minimum planning standards and procedures that local government planning and zoning jurisdictions could adopt and enforce pertaining to the protection of river corridors, mountains, water supply watersheds, groundwater recharge areas, and wetlands | 1989 | Current | Regulatory |

| Pollutant(s) Affected | Sources of Pollutant(s) | Impacted Waterbodies* | Anticipated or Past Effectiveness |
|-----------------------|--------------------------------------|-----------------------|------------------------------------------------------------------------------------------------|
| Fecal Coliform | Agricultural, Residential, Municipal | Little Ohoopsee River | Effectiveness is minimal because of lack of land use management regulations at the local level |

| Measurable Milestones | Schedule | | Comments |
|---------------------------------|----------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | Start | End | |
| Land Use Management Regulations | 2003 | Ongoing | Need to work with local governments to establish land use management regulations and other regulations as appropriate/ Need to work with local governments in enforcing DNR's Part 5 Environmental Planning criteria to better protect local streams |

| Regulation/Ordinance or Management Measure | Responsible Government, Organization or Entity | Description | Enacted/Projected Date | Status | Regulatory/Voluntary |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|---------|----------------------|
| Land Use Management Regulations | Heart of Georgia Altamaha Regional Development Center, Local Governments, Georgia Department of Natural Resources, Georgia Department of Human Resources, Georgia Department of Community Affairs, Georgia Forestry Commission | Utilize state-mandated environmental planning criteria, local planning and zoning ordinances, BMPs for agriculture and forestry, and septic tank permitting to manage runoff and development, RDC will provide technical assistance in developing a model “zoning-lite” ordinance to encourage local governments to implement planning and zoning measures | Adopted on a County-by-County basis | Planned | Regulatory |

| Pollutant(s) Affected | Sources of Pollutant(s) | Impacted Waterbodies* | Anticipated or Past Effectiveness |
|-----------------------|--------------------------------------|-----------------------|-----------------------------------------------------------------------------|
| Fecal Coliform | Agricultural, Residential, Municipal | Little Ohoopsee River | Not very effective due to lack of Land Use Regulations on county-wide level |

| Measurable Milestones | Schedule | | Comments |
|---------------------------------------------------|----------|---------|------------------------------------------------------------------------------|
| | Start | End | |
| Establishment of County-wide Land Use Regulations | 2008 | Ongoing | There is a need to work with local governments to adopt Land Use Regulations |

| Regulation/Ordinance or Management Measure | Responsible Government, Organization or Entity | Description | Enacted/Projected Date | Status | Regulatory /Voluntary |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|---------|-----------------------|
| Cooperative Monitoring Program | Georgia Department of Natural Resources, Georgia Environmental Protection Division, Local Governments, Heart of Georgia Altamaha Regional Development Center | Seek a scientific study of issues such as natural dissolved oxygen levels in slow-moving streams, could seek funding/cooperation for watershed assessments including possible model demonstration assessments for small watersheds, develop a program for implementation assessments for the Little Ohoopsee River Watershed Cluster | | Planned | Voluntary |

| Pollutant(s) Affected | Sources of Pollutant(s) | Impacted Waterbodies* | Anticipated or Past Effectiveness |
|-----------------------|--------------------------------------|-----------------------|-------------------------------------------------------------------------------------------------------------------------------|
| Fecal Coliform | Agricultural, Residential, Municipal | Little Ohoopsee River | Anticipated effectiveness is significant because of more frequent monitoring which will produce better and more frequent data |

| Measurable Milestones | Schedule | | Comments |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|---------|-------------------------------------------------------------------------------------------------------------------------------------------|
| | Start | End | |
| Implementation of Adopt-A-Stream programs with various organizations for purposes of more sampling/Additional monitoring to increase the amount of data collected | 2003 | Ongoing | Utilize monitoring programs of Georgia Forestry Commission, NRCS, Adopt-A-Stream to gather updated sampling data on a more frequent basis |

| Regulation/Ordinance or Management Measure | Responsible Government, Organization or Entity | Description | Enacted/Projected Date | Status | Regulatory /Voluntary |
|--------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|------------------------|---------|-----------------------|
| Environmental Code Enforcement | Local Governments, Department of Natural Resources, Environmental Protection Division | Utilize local ordinances to ensure greater compliance with state environmental codes at the local level | 2008 | Planned | Regulatory |

| Pollutant(s) Affected | Sources of Pollutant(s) | Impacted Waterbodies* | Anticipated or Past Effectiveness |
|-----------------------|-------------------------|-----------------------|-----------------------------------------------------------------------|
| Fecal Coliform | Residential | Little Ohoopsee River | Limited effectiveness due to lack of enforcement at county-wide level |

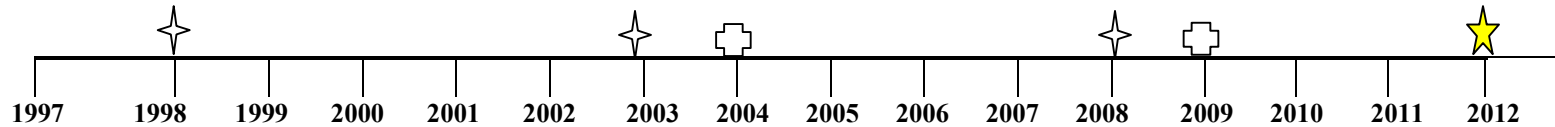
| Measurable Milestones | Schedule | | Comments |
|-------------------------------------------|----------|---------|------------------------------------------------------------------------------------------------------------------------------------------|
| | Start | End | |
| Establishment of code enforcement program | 2008 | Ongoing | Greater enforcement of state standards at the local level could help to reduce the amount of man made wastes entering into local streams |

POTENTIAL FUNDING SOURCES The identification and discussion of dedicated funding is important in determining the economic feasibility of the above-mentioned management measures.

| Funding Source | Responsible Authority | Status | Anticipated Funding Amount | Impacted Waterbodies* |
|-----------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-----------------------------------|------------------------------|
| Georgia Forestry Commission | Georgia Forestry Commission | Current | Unknown | Little Ohoopsee River |
| Georgia Department of Natural Resources | Environmental Protection Division | Current | \$75,000.00 | Little Ohoopsee River |
| U.S. Environmental Protection Agency | U.S. Environmental Protection Agency | Planned | Unknown | Little Ohoopsee River |
| U.S. Department of Agriculture | Farm Service Agency | Planned | Unknown | Little Ohoopsee River |
| U.S. Department of Agriculture | Natural Resource Conservation Service | Planned | Unknown | Little Ohoopsee River |
| U.S. Fish and Wildlife Service | Georgia Soil and Water Conservation Service (“Partners for Wildlife” Program) | Planned | Unknown | Little Ohoopsee River |
| University of Georgia Extension Service | Local Cooperative Extension Service (Home*A*Syst Program) | Planned | Unknown | Little Ohoopsee River |
| University of Georgia Extension Service | Local Cooperative Extension Service (Farm*A*Syst Program) | Planned | Unknown | Little Ohoopsee River |
| State Implementation Committee | Sustainable Forestry Initiative Program | Planned | Unknown | Little Ohoopsee River |
| Georgia Forestry Commission | Georgia Forestry Commission (Best Management Practices Assurance Examinations) | Current | Unknown | Little Ohoopsee River |
| The National Fish and Wildlife Foundation | The National Fish and Wildlife Foundation (General Challenge Grant Program) | Planned | Unknown | Little Ohoopsee River |
| Georgia Department of Natural Resources (Wildlife Resources Division) | Georgia Department of Natural Resources (Wildlife Resources Division) “Small Game Management in Georgia” & “Beaver Management and Control in Georgia” Booklets | Current | Unknown | Little Ohoopsee River |

PROJECTED ATTAINMENT DATE

The projected date to attain and maintain water quality standards in this watershed is 10 years from acceptance of the TMDL Implementation Plan by EPD.



EPD Monitoring 
 Evaluate TMDL & Attainment Date 
 Project Attainment 

MONITORING PLAN

The purpose of this monitoring plan is to determine the effectiveness of the target TMDL and the management measures being implemented to meet water quality standards. List of previous, current or planned/proposed sampling activities or other surveys. (Monitoring data that placed stream on 303(d) list will be provided if requested.)

| Name Of Regulation / Ordinance Or Management Measure | Organization | Impacted Waterbodies* | Pollutants | Purpose/Description | Time Frame | | Status (Previous, Current, Proposed) |
|---------------------------------------------------------|------------------------------------|--------------------------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------|-----------------------------------------|
| | | | | | Start | End | |
| 1999 Study | United States Geological Survey | Little Ohoopsee River | Fecal Coliform | To detect the levels of Fecal Coliform at the USGS Certified Station #02225255 (State Road 56 near Coven, GA) | 1/99 | 12/99 | Previous |
| Best Management Practices Monitoring | Georgia Forestry Commission | Little Ohoopsee River | Fecal Coliform | Within the watershed, can conduct monthly aerial and land reconnaissance to identify recent forestry practices, conduct BMP audit, and make recommendations for remediation if problems are found | | On- going | Current |

CRITERIA TO DETERMINE WHETHER SUBSTANTIAL PROGRESS IS BEING MADE

The following set of criteria will be used to determine whether any substantial progress is being made towards reducing pollutants in impaired waterbodies and attaining water quality standards. Discussion on each criteria is recorded in the space provided. Additional relevant criteria are presented in comments.

Percent of concentration or load change (monitoring program)

Install BMPs and reduce the amount of fecal coliform by 20% by 2012

If monitoring results show that it is unlikely that the TMDL will be adequate to meet water quality standards, revision of the TMDL may be necessary.

- Categorical change in classification of the stream (delisting the stream is the goal)

Classification is proposed to remain fishing/ Delist from 303(d) list

- Regulatory controls or activities installed (ordinances, laws)

Work with local governments and individuals to install Erosion and Sedimentation Controls, Land Use Management Regulations (Development Regulations such as stream buffers, limited impervious cover, porous pavement materials, limited clearing, grading, and disturbance); BMPs, Storm Water Management, Code Enforcement, etc. to help reduce runoff and minimize land disturbance.

- Best management practices installed (agricultural, forestry, urban)

Agriculture – (Waste Storage Facilities, Conservation Tillage, Waste Storage Pond, Diversion, Fencing, Field Borders, Filter Strips, Stock Trails/Walkways)

COMMENTS

Attachments

- Appendix A – Little Oohopee River Watershed Cluster Proposed TMDL Implementation Plan Committee Meeting Invitation List (July 10, 2003)
- Appendix B – Little Oohopee River Watershed Cluster Proposed TMDL Implementation Plan List of Major Landowners Invited to Committee Meeting
(July 10, 2003) (Johnson and Emanuel counties)
- Appendix C – Little Oohopee River Watershed Cluster Proposed TMDL Implementation Plan Committee and Major Landowners Meeting Sign-in Sheet
(July 10, 2003)
- Appendix D – Little Oohopee River Watershed Cluster Proposed TMDL Implementation Plan Committee and Major Landowners Meeting Handout
(July 10, 2003)
- Appendix E – Stakeholder Notification List for Little Oohopee River Watershed Cluster Proposed TMDL Implementation Plan Public Meeting (August 8, 2003)
(Johnson and Emanuel counties)
- Appendix F – Press Release for Public Meeting for Little Oohopee River Watershed Cluster Proposed TMDL Implementation Plan in The Forest Blade
(August 4, 2003)
- Appendix G – Public Service Announcement concerning Upper Oohopee River Watershed Cluster Proposed TMDL Implementation Plan given to The Radio Group in Swainsboro, GA (August 5-8, 2003)
- Appendix H – Little Oohopee River Watershed Cluster Proposed TMDL Implementation Plan Public Meeting Sign-in Sheet (August 7, 2003)
- Appendix I – Little Oohopee River Watershed Cluster Proposed TMDL Implementation Plan Public Meeting Handout (August 7, 2003)
- Appendix J – Memo to City of Stillmore City Council to be placed in the July 14th, 2003 Meeting Agenda Packet (June 12, 2003)
- Appendix K – Memo to City of Swainsboro City Council to be placed in the August 18th, 2003 Meeting Agenda Packet (July 15, 2003)
- Appendix L - Little Oohopee River Watershed Cluster Proposed TMDL Implementation Plan Handout for Emanuel County Commissioners meeting and Cities of Stillmore and Swainsboro City Council Meetings
- Appendix M – Little Oohopee River Watershed Cluster Proposed TMDL Implementation Plan Committee Review Memo (August 8, 2003)

| | | | | | |
|------------------------|------------------------|-----|----|------|-------|
| Prepared By: | Nicholas Overstreet | | | | |
| Agency: | HOGA RDC | | | | |
| Address: | 331 West Parker Street | | | | |
| City: | Baxley | ST: | GA | ZIP: | 31513 |
| E-mail: | overstreet@hogardc.org | | | | |
| Date Submitted to EPD: | 8/15/2003 | | | | |

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Environmental Protection Division of the Department of Natural Resources,
State of Georgia.

TOGETHER WE CAN MAKE A DIFFERENCE!
